Revolutionary Neuromorphic Computing Capability Made Possible by New Hypothesis Concerning White Matter's Role in Signal Sequence Inversion and Pathological Deception

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Introduction

Studies have found that individuals who are pathological liars have a higher proportion of white matter to gray matter, but how exactly it is that this disproportionality results in the functional symptom of pathological lying remains unclear.

Abstract

White matter's primary, normative function may be to generate sequential inversions of visual sensory inputs so as to enable the documented phenomenon of the inversion and mirroring of received visual information by the eye.

When white matter exists in too great of a proportion relative to gray matter or in the wrong neurological zones, this flipping of sequence of analog data may lead to the sequential inversions we associate with dyslexia, the inversion of the sequence of spoken words and the sequential inversion of memories as they are encoded onto proteins for long-term storage.

Our concept of what is true and what is imagined is, I propose, largely governed by whether a memory is encoded in a normative sequence or in an inverse sequence. The brain, I propose, is capable of reading these encoded memories and comprehending them in what might be termed the normative direction as well as in the inverse direction. There has been a great deal of speculation as to exactly why it is that those with the condition known as pathological dishonesty cannot differentiate between what is true and what is a concoction of their imagination.

When information is generated from sensory inputs, its direction of travel through axonal pathways would logically the be inverse of the direction of travel of an internally-generated set of data. Something coming from the imagination would start from near the core of the brain and work its way outward toward the cortex layer. As the physical impulses of electricity themselves would be directionally inverted, the sequence of stored aminos associated with something imagined should be the inverse of an identical experience that is based upon real sensory inputs. If the protein a memory is encoded into is like a box and I want to put a book, a hat, and a baseball into my box, then a true experience might see the amino acids encoded in the order of "book, hat, baseball," but if that memory is the memory of a fantasy, then the sequence would be "baseball, hat, book."

A pathological liar might therefore have memory engrams that are encoded onto proteins with the aminos in exclusively the inverse sequence with virtually no memories in the forward sequence, creating the illusion that their real memories are the figments of their imagination and not the other way around.

White matter brings about these inversions of sequence through a biological process in which functional signal pathways are made more circuitous by collocation of cells on either side of pathways with specific patterns of charge. Neurological signals are analog in nature and include a great deal of repeating information. Staring at a picture of a dog for one second would result in the same image being relayed repetitively thousands of times. Repetitions of identical analog information have breaks between them in which there is no activity in which stored energy in these specialized tissues is discharged.

When fully discharged, this specialized tissue slows the conduction of electrical pulses in a charge-dependent manner. This is achieved through the placement of capacitant cells alternated with insulated cells that are persistently negatively charged. Positively charged cells tug at electricity and pull it in the direction of the walls of the pathway. Some of this electricity is temporarily stored in these cells, but most of the current is allowed to pass through to its ultimate destination. Imagine a highway on which the concrete barriers lining that highway on either side could conditionally repel or attract cars as they passed. Imagine if every other individual barrier could either attract or repel and every other barrier would "always" repel, keeping cars in the center of the road.

If all of the "barriers" are negative charged, the "cars" would flow down the center of the road in a straight line. If every other barrier pulled cars to the side, however, the cars would "wobble" and would be repeatedly pushed back and forth, never hitting the wall head-on but occasionally scraping that wall. As "charge" accumulates in these barriers from that "scraping," their tendency to bring about this wobble is lessened. The net result would be that clusters of cars moving down this road would see the car in the rear ultimately surpass the forward-most vehicle and the perfect inversion of sequence of these cars. Since we're talking about electricity and not cars, the proverbial cars may pass directly through one another and do not need to drive around one another to jockey for a different relative position.

This is how white matter can invert analog data sequentially and how it is that pathological liars can wind up with memories with inverse sequential engrammatic encoding.

Application for Reaping Greater Benefit from Neuromorphic Processors

The ability to mimic the way in which the brain processes information has recognized value in augmenting traditional computing systems. Absent from the current state of the art is a synthetic neuromorphic bit-inversion mechanism. If the human brain is already performing this function, understanding the mode of function of that mechanism is essential for facilitating its synthetic imitation.

With the ability to invert sequences of analog or digital pulses, a single instruction might be used to instruct a computer to try thousands of possible combinations of bit-sequences with the bruteforcing of a password being only one of many possible applications. The ability to invert the relative position of a handful of pairs of electrical impulses and the combination of these structures with neurological "switchtracks" that allow for the shuffling of these combinations in pre-ordained ways would enable a physical structure to do all of the "work" in terms of pushing a computer's ordinarily software-driven progression along using the physical structure to not only perform computations but to generate instructions automatically without further inputs.

Conclusion
This seemingly mundane insight into an obscure field of neurology turns out to have critical application in the field of advancing neuromorphic computing and is therefore deserving of immediate attention.